

## **Amendments to the Claims:**

This listing of claims will replace all prior versions and listings of claims in the application.

### **Listing of Claims:**

1. (currently amended) A recombinant donor bacterium-harboring at least one transmissible plasmid, said transmissible plasmid comprising:

a) an origin of replication for synthesizing the plasmid in a bacterial cell, wherein initiation of replication at the origin is negatively controlled by a plasmid replication ~~repressor~~ protein comprising a copy number control function, wherein in the absence of the plasmid replication ~~repressor~~ protein copy number control function, the transmissible plasmid undergoes runaway replication;

b) a mutant gene encoding a plasmid replication protein comprising a copy number control function, wherein said mutant gene encoding said plasmid replication protein comprises a mutation that reduces the copy number control function of said plasmid replication protein;

[[b]]c) an origin of transfer from which conjugative transfer of the transmissible plasmid initiates from the donor bacterium to at least one recipient bacterium; and

[[c]]d) at least one screenable marker gene;

wherein the donor bacterium further comprises one or more transfer genes conferring upon the donor bacterium the ability to conjugatively transfer the transmissible plasmid to the recipient bacterium, and wherein the donor bacterium ~~produces the plasmid replication repressor~~ further comprises a wild type gene encoding said plasmid replication protein comprising a copy number control function, and further wherein the at least one recipient bacterium is a pathogenic bacterium that does not produce the plasmid replication ~~repressor~~ protein comprising a copy number control function, thereby enabling the transmissible plasmid to undergo runaway replication in the recipient bacterium.

2. (previously presented) The recombinant donor bacterium of claim 1, further comprising a helper plasmid, wherein said one or more transfer genes are contained on said helper plasmid, such that the transmissible plasmid is transmissible from the donor bacterium to a recipient bacterium, but is not further transmissible from the recipient bacterium to another recipient bacterium.

3. (previously presented) The recombinant donor bacterium of claim 1, wherein said one or more transfer genes are contained on the transmissible plasmid, such that the transmissible plasmid is transmissible from the donor bacterium to a recipient bacterium, and further from the recipient bacterium to another recipient bacterium.

4. (currently amended) The recombinant donor bacterium of claim 1, wherein ~~the transmissible plasmid comprises a derivative of a naturally occurring transmissible plasmid containing a gene encoding the plasmid replication repressor that has been mutated to produce a non-functional plasmid replication repressor~~ said plasmid replication protein is a bifunctional protein comprising a plasmid replication activator function and a plasmid replication inhibitor function, wherein when the plasmid replication activator function is present and when the plasmid replication inhibitor function is reduced, the transmissible plasmid undergoes runaway replication, and wherein said mutant gene encoding a plasmid replication protein comprising a copy number control function is a mutant gene encoding a bifunctional plasmid replication protein comprising a plasmid replication activator function and a plasmid replication inhibitor function, wherein said gene encoding said bifunctional plasmid replication protein comprises a mutation that reduces the plasmid replication inhibitor function of said bifunctional plasmid replication protein.

5. (previously presented) The recombinant donor bacterium of claim 4, wherein the naturally-occurring transmissible plasmid is selected from the group consisting of RK2, R6K, pCU1, p15A, pIP501, pAM $\beta$ 1 and pCRG1600.

6. (currently amended) The recombinant donor bacterium of claim 5, wherein the naturally-occurring transmissible plasmid is R6K and the mutation in said bifunctional plasmid replication protein comprises a mutation in the R6K *pir* gene such that its encoded  $\pi$  protein comprises ~~an~~ at least one amino acid deletion or substitution at amino acid 105, 106 or 107.

7. (previously presented) The recombinant donor bacterium of claim 1, wherein the donor bacterium is a non-pathogenic strain of bacteria selected from the group consisting of *Escherichia coli*, *Lactobacillus spp.*, *Lactococcus*, *Bifidobacteria*, *Eubacteria*, and bacterial minicells.

8. (previously presented) The recombinant donor bacterium of claim 1, wherein the recipient bacterium is a pathogenic strain of bacterium selected from the group consisting of *Campylobacter spp.*, *Enterobacter spp.*, *Enterococcus spp.*, *Escherichia coli*, *Gardnerella vaginalis*, *Haemophilis spp.*, *Helicobacter pylori*, *Mycobacterium tuberculosis*,

*Propionobacter acnes*, *Pseudomonas aeruginosa* and other *Pseudomonas spp.*, *Salmonella typhimurium*, *Shigella spp.* and *Staphylococcus spp.*

9. (previously presented) The recombinant donor bacterium of claim 1, wherein the origin of replication is that of a plasmid selected from the group consisting of R6K, RK2, rts1, p15A and RSF1010.

10. (previously presented) The recombinant donor bacterium of claim 1, wherein the origin of replication is selected from the group consisting of F and P1.

11. (previously presented) The recombinant donor bacterium of claim 1, wherein the screenable marker gene confers a nutritional selection advantage on cells containing the transmissible plasmid.

12. (previously presented) The recombinant donor bacterium of claim 1, wherein the transfer genes are those of a plasmid selected from the group consisting of F, R6K and Ti.

13-15. (canceled)

16. (previously presented) A recombinant donor bacterium harboring at least one transmissible plasmid, said transmissible plasmid comprising:

- a) an origin of replication for synthesizing the plasmid in a bacterial cell;
- b) an origin of transfer from which conjugative transfer of the transmissible plasmid initiates from the donor bacterium to at least one recipient bacterium;
- c) at least one "killer gene" that, upon expression in a bacterial cell, produces a product that kills the cell; and
- d) at least one screenable marker gene;

wherein the donor bacterium further comprises one or more transfer genes conferring upon the donor bacterium the ability to conjugatively transfer the transmissible plasmid to the recipient bacterium, and wherein the donor bacterium is modified so as to be unaffected by the product of the "killer gene", and further wherein the at least one recipient bacterium is a pathogenic bacterium that has not been modified so as to be affected by the product of the "killer gene".

17. (previously presented) The recombinant donor bacterium of claim 16, wherein the transfer genes are contained on a helper plasmid within the donor bacterium, such that the transmissible plasmid is transmissible from the donor bacterium to a recipient bacterium, but is not further self-transmissible from the recipient bacterium to another recipient bacterium.

18. (previously presented) The recombinant donor bacterium of claim 16, wherein the transfer genes are contained on the transmissible plasmid, such that the transmissible

plasmid is self-transmissible from the donor bacterium to a recipient bacterium, and further from the recipient bacterium to another recipient bacterium.

19. (previously presented) The recombinant donor bacterium of claim 16, wherein the “killer gene” kills the recipient bacterium by being expressed and thereby producing a gene product that is detrimental or lethal to the recipient bacterium, and the donor bacterium has been modified so as to repress the expression of the “killer gene”, thereby avoiding production of the detrimental or lethal gene product.

20. (previously presented) The recombinant donor bacterium of claim 16, wherein the “killer gene” is a gene of a bacteriophage.

21. (previously presented) The recombinant donor bacterium of claim 20, wherein the bacteriophage is selected from the group consisting of T-series phages, P1, p22 and  $\lambda$ .

22. (previously presented) The recombinant donor bacterium of claim 16, wherein the donor bacterium is a non-pathogenic strain of bacteria selected from the group consisting of *Escherichia coli*, *Lactobacillus spp.*, *Lactococcus*, *Bifidobacteria*, *Eubacteria*, and bacterial minicells.

23. (previously presented) The recombinant donor bacterium of claim 16, wherein the recipient bacterium is a pathogenic strain of bacterium selected from the group *Campylobacter spp.*, *Enterobacter spp.*, *Enterococcus spp.*, *Escherichia coli*, *Gardnerella vaginalis*, *Haemophilis spp.*, *Helicobacter pylori*, *Mycobacterium tuberculosis*, *Propionobacter acnes*, *Pseudomonas aeruginosa* and other *Pseudomonas spp.*, *Salmonella typhimurium*, *Shigella spp.* and *Staphylococcus spp.*

24. (previously presented) The recombinant donor bacterium of claim 16, wherein the origin of replication is that of a plasmid selected from the group consisting of R6K, RK2, rts1, p15A and RSF1010.

25. (previously presented) The recombinant donor bacterium of claim 16, wherein the origin of replication is selected from the group consisting of F and P1.

26. (previously presented) The recombinant donor bacterium of claim 16, wherein the screenable marker gene confers a nutritional selection advantage on cells containing the transmissible plasmid.

27. (previously presented) The recombinant donor bacterium of claim 16, wherein the transfer genes are those of a plasmid selected from the group consisting of F, R6K and Ti.

28-31. (canceled)